REMARKS

Status of Claims

Independent claims 1 and 2 are as presented in Applicants' reply of March 23, 2010.

Claims 3 and 5 are withdrawn, claims 11 and 12 are as earlier presented, and claims 4, 6-10, 13 and 14 are canceled.

- **Claims 1, 2, 11 and 12 are pending.**

Claim Rejections – 35 U.S.C. § 103

Claims 1, 2, 11 and 12: Motoki et al. '347 in view of Kiehlbauch et al. '487

Claims 1, 2, 11 and 12 were rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Pat. No. 6,468,347 to Motoki et al. in view of U.S. Pat. App. Pub. No. 2004/0238487 in the name of Kiehlbauch et al.

Under "Response to Arguments" on Page 2 of its November 5, 2010 action report the Office for its part notes that the new ground of rejection, here presently addressed, renders Applicants' previous arguments moot; in turn, on Applicants' part it is noted that the Office's previous rejections have likewise been rendered moot. That is, the present rejection is taken as an indication that prosecution of this application has advanced such as to have narrowed down the allowance-impeding issues to a single, simple rejection under § 103.

Motoki et al. is alleged to teach all of the limitations of independent claims 1 and 2, except for the feature of the GaN substrate being contaminated at the interface between it and the device-forming film by at least Si, Cr, Mn, Fe, Ni, Cu, Zn or Al, at a density level of from 15×10^{10} to 10 {or 5} $\times 10^{11}$ atoms/cm^2. *Kiehlbauch et al*. is then cited simply for teaching metal contaminants being residual on crystalline material at a level of 15×10^{10} atoms/cm^2, which therein is the result of CMP.

It is respectfully submitted that the rejection is improper because *Kiehlbauch et al*. is not in the same field of endeavor.

That is, in citing *Kiehlbauch et al*. the Office alleges, "In the same field of endeavor, *Kiehlbauch* teaches how in an ordinary CMP / polishing method, one of ordinary skill would expect to find metal contaminants such as Fe for example." Yet technology for polishing and finishing quartz glass components of plasma processing apparatuses is not applicable to processing GaN crystal so as to obtain a mirrorlike finish. As paragraph [0006] of the present specification notes,

> polishing, etching, and related technology for rendering [GaN] crystal into wafers with a mirrorlike finish has not been developed. Consequently, the present stage is one in which films are grown onto the crystal as it is, without polishing or etching.

What is more, Table V of the present specification sets forth the results of an experiment in which GaN substrates were dry-etched, without being subjected to any further processes. The experimental dry etching whose results are given in Table V was conducted in a manner analogous to the plasma etching that *Kiehlbauch et al*. teaches is a crucial follow-up step to mechanical slurry-polishing, in the technology for superficially processing quartz glass components of plasma reactors that *Kiehlbauch et al*. is directed to.

Yet as paragraph [0123] of the present specification explains, "Metal impurities remain behind on the [GaN] wafer surface after being dry etched, which means that a clean surface cannot be obtained by the dry etching process alone." Hence, Table V clearly evinces that the teachings of *Kiehlbauch et al*., as combined with those of *Motoki et al*., could not arrive at the present invention. In particular, even though *Kiehlbauch et al*. achieves a level of crystalline surface contamination by Fe that is within the surface metal contaminant range recited in claims 1 and 2, that contamination is on quartz, not GaN. Table V clearly demonstrates that this difference is critical; substituting GaN for the quartz processed according to *Kiehlbauch et al*. would not yield, on GaN, the results that the *Kiehlbauch et al*. process achieves on quartz.

Hence, it is believed that the requirements for a proper determination of obviousness under 35 U.S.C. § 103(a) have not been met. In particular, the differences between *Kiehlbauch et al*. and the claims at issue are such that a person of ordinary skill in the art of the presently claimed invention at the time of its completion by Applicants would not have been able to arrive at the present invention without inventive effort on par with that of Applicants.

For at least the foregoing reasons, it is respectfully submitted that the presently addressed rejection over *Motoki et al*. in view of *Kiehlbauch et al*. is lacking a proper legal factual basis, in particular as given by the so-called *Graham* factual inquires. The rejection of claims 1, 2, 11 and 12 is therefore believed to have been fully addressed and overcome.

Conclusion

Accordingly, Applicant courteously urges that this application is in condition for allowance. Reconsideration and withdrawal of the rejections is requested. Favorable action by the Examiner at an early date is solicited.

Respectfully submitted,

February 5, 2011 /James Judge/

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